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Abstract

ICT adoption to facilitate business processes is a growing trend in today's global environment. As SMEs play an important role in a country's economy, they cannot lag behind in ICT adoption. In order to join the e-business bandwagon, SMEs need to understand the barriers in the path and the benefits offered by e-business adoption. This paper has reviewed the extant literature of barriers, benefits of e-business adoption before proposing some key enablers that facilitate the adoption. Six existing e-readiness tools that are used globally to measure e-readiness are also reviewed. The review of different aspects of e-business readiness has motivated their unification and the definition of an holistic framework (Motivation Application Measurement Support e-readiness framework). The MAMS framework can be utilized as a reference to assess, design and implement a supplementary strategic approach for e-business readiness of SMEs.

Keywords

Information and communication technology (ICT), small to medium enterprise (SME), electronic business, electronic commerce, e-readiness, The Internet, e-readiness assessment.

1. Introduction

Small to medium sized enterprises (SMEs) play an important role in any country's economy and are considered as the backbone of the national economy. Almost 90% of the total number of businesses across the world are classed as SMEs accounting for more than 60% of employment in their countries (Hall, 2002; Organisation for Economic Cooperation and Development [OECD], 1997) and also account for 80% of global economic growth (Jutla et al, 2002). SMEs, worldwide, are seen as major contributors to a nation's economy and the Gross Domestic Product (GDP) of their countries. However their contribution to the GDP has been declining over the past few years (Abernethy, 2002). With the financial turmoil that has currently engulfed most countries, this situation is unlikely to show any major improvements in the near future. The decline of SME contribution to GDP needs to be reversed by adopting some strategic goals for long term growth. Undoubtedly e-business has the potential to become a major source of competitive advantage for SMEs. Moving from bricks to clicks is becoming a matter of existence for most organisations today and SMEs are no exception. E-business is often touted as a global phenomenon that provides businesses with strategic advantages in the present competitive environment by enabling their processes online using

Information and Communication Technologies (ICT). Thus ICT's adoption by organisations, irrespective of their size and location, cannot be overlooked.

A disparity seems to exist in diverse empirical findings that have reported the level of adoption of e-business in SMEs (Ramsey et al, 2003; Xu et al, 2007). SMEs cannot be left behind in the race of e-business adoption and need to grasp the opportunities proffered by ICT. Thus, this paper provides an insight into the benefits, barriers and enablers of e-business for SMEs to encourage ICT adoption. Also, at this stage the importance of e-readiness assessments to measure the preparedness of an entity to conduct business processes in the online world is to be recognised. Substantial literature on SME e-business adoption is fragmented, complex and industry specific, so this paper has been derived from the vast extant literature on SME adoption of the Internet and Internet-based technologies in executing business processes in an attempt to present a unified view.

The paper begins by providing definitions of e-business and SMEs before reviewing different e-business benefits and barriers. The paper then proposes key enablers to resolve the barriers and encourage e-business adoption. Attention is then given to e-readiness as presented in the literature and its usefulness in assessing the preparedness for the adoption of ICT. The paper explores six existing e-readiness assessment tools (loosely called models or frameworks in the corresponding literature) for e-readiness that measure different sets of categories for assessing e-readiness. The comprehensive analysis of existing research of e-business adoption is then used to bring the different aspects, i.e., enablers and barriers of e-business adoption by SMEs, e-readiness categories together, and is presented as an e-readiness assessment framework (Motivation Application Measurement Support (MAMS) e-readiness assessment framework). Later in the paper the application and usability of the framework are discussed in the context of a generic and also a real world case to assess readiness for e-business adoption by SMEs. Finally, future research avenues have been recommended in the conclusion.

2. Definitions of electronic business and SMEs

E-business and e-commerce are terms that are often used interchangeably. It can be argued that electronic commerce includes outward facing processes for buying and selling, involving customers, suppliers and other external stakeholders whereas electronic business, apart from outward facing processes, also includes inward facing organisational processes. Thus, e-business refers to a larger range of processes performed electronically encompassing e-commerce too. Some existing definitions for e-commerce and e-business have been presented below:

> World Trade Organisation (WTO) has defined e-commerce as the production, distribution, marketing, sale, or delivery of goods and services by electronic means. (Baker and McKenzie, 2001)
>
> Electronic Commerce Team of European Union has defined e-commerce as "buying and selling products or services over the Internet."(Schulze & Baumgartner, 2001, p. 7)
>
> Currie (2000, p.7) has defined e-business as "use of the Internet for electronic transactions, digital delivery of informational goods and services, and retail sale of tangible goods."

As evident from the above definitions and as reported by Ramsey et al (2003) and Searle (2001) there is a difference between e-commerce and e-business in terms of extent of organisational processes, technology used, and business value achieved. However the gray area has not actually ceased to exist and both the terms are still used interchangeably. Because of these variations and in the absence of a commonly agreed definition of e-business the following definition for e-business is proposed: "Buying, selling and conducting other business operations using ICT, more specifically Internet-based technologies."

Having a definition of e-business to proceed with, attention is directed to the definition of SME. A review of the literature on SMEs does not provide an agreed universal definition of SMEs and a systemic problem of an accurate definition seems to exist because of the diverse nature of SMEs. Two acceptable definitions for SMEs have been presented below to allow a more informed judgement:

> European Commission (2005, p. 5) classifies SMEs as "enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro."
>
> The Australian Bureau of Statistics (2003) defines SMEs as firms employing less than 200 full time equivalent workers and are not subsidiaries, public companies, or incorporated bodies.

Analysing the above definitions leaves us in no doubt that there are many variables that influence an enterprise, especially SMEs, including economies of scale, market structure, the industry itself, and the regulatory environment that influences the firm. In the absence of a shared definition, it is appropriate to adhere to a definition that combines the number of employees and the annual turnover. For the purposes of this paper, the revised definition by the European Commission given in 2005 has been adopted as it accounts for headcount, annual turnover, and annual balance sheet total.

3. The benefits and barriers of e-business adoption

E-business has redefined the way business is conducted and should not be merely considered as another technology that helps in running operations. It is an innovation that has replaced the traditional way of doing business (Laudon & Laudon, 2010). Various studies have shown that e-business has a significant contribution towards economic growth and competence (Forrester Research, 2005; IDC, 2004). Increased growth of e-business in recent years can be attributed towards lesser production costs and increased productivity. Now with lesser expenditures, any small business can go online; thanks to the Internet, liberalisation of telecommunications and advancement in technological segments of communications. Every firm that has adopted e-business principally depends on how it is operated, therefore it becomes necessary to edify benefits and barriers of e-business adoption to realise the true value of e-business.

3.1 Benefits of e-business adoption

Technical advancement has provided opportunities for SMEs to position themselves in a global market and reach worldwide customers. Most established firms now have both an offline and online presence; thus, enhancing their brand credibility and an increased opportunity for SMEs to compete with the established firms. The ubiquitous nature of the Internet has made it an important tool of e-business for SMEs.

By providing quality products, attractive prices and services, easy to navigate sites and speedy delivery and checkouts, SMEs can build and preserve an upholding relationship with their customers. Consumers of today demand products that suit their needs and by identifying the expectations of customers in terms of value, merchandise, service, information and promotions, SMEs can target ideal customers. Thus one of the important benefits of the Internet is facilitating information transfer (Tiessen et al., 2001). The information transfer can adopt any mode and can be relevant for the stakeholders of SMEs.

SMEs can make use of the enormous influence of the Internet to promote their brands and increase sales by traffic generation. According to Sensis (2005), SMEs use the Internet for various purposes that include, but are not limited to, communication via email, referencing information or researching data, looking for information about products and services, banking, making and receiving payments, taking and placing orders and monitoring competition and marketing.

Some important benefits of e-business adoption that are more relevant for SMEs include: direct and indirect cost savings, increased productivity, enhanced customer satisfaction and better relationships, increased competitiveness, efficient information delivery, speedy responses to customer queries, new sales and distribution channels, faster product delivery, improved organisational brand image, knowledge sharing and organisational learning through networking, relatively cheaper advertising medium, and integration of business partners in existing processes(Kaynak et al., 2005;OECD, 2004; Walczuch et al, 2000; Nath et al., 1998).

3.2 Barriers of e-business adoption

Despite the numerous benefits from e-business adoption, SMEs are slow in its adoption and usage compared to their larger counterparts (Kartiwi & MacGregor, 2007; Ihlstrum et al, 2003) and it is mainly larger firms that are reaping the benefits of e-business (Riquelme, 2002). Lack of telecommunication infrastructure has been put forth as a barrier by Sheth and Sharma (2005) and this barrier is one of the major concerns for some developing countries. The barriers become more unique for developing countries where factors such as low average income of its people, slow credit card uptake, and cultural barriers (Hawk, 2004) and initially low profits make the use of e-business technologies more uncertain. A study by Lawson et al. (2003) of the factors affecting adoption of e-commerce technologies by SMEs identified the top four barriers to be concern about security and privacy of transactions, cost of consultants, lack of government incentives, and lack of IT expertise. In a study by Kartiwi and MacGregor (2007) to ascertain the barriers for e-business adoption between Sweden and Indonesia, the most significant barrier reported in both countries was that e-ecommerce was not suited to the products and services offered by the surveyed SMEs. On an alternative note, it might be worth arguing that suitability of products and services may not necessarily be a barrier to adoption of e-business since there are other important uses of e-business apart from simply buying and selling.

Cloete et al. (2002), in their study of SME adoption of e-commerce in South Africa, have summarised other additional issues that have a decapitating impact on the adoption of e-business. These issues include low adoption of e-commerce by SME customers and suppliers, high costs of e-commerce technology, legal and liability concerns, security concerns, restricted knowledge of e-commerce models and methodologies, and finally the perception that e-business does not provide any benefits to the enterprise. Many identified barriers in the

various studies appear to be more non-technical and demonstrate general lack of knowledge of the potential benefits that the adoption of e-business can offer (Lawson et al. 2003).

It is evident from above that a diverse range of barriers prevent SMEs from reaping the benefits of e-business adoption. The review described in this section has provided a clearer understanding of the benefits and barriers although the nature of the relationships between the two is not clear. Without trying to assert a relationship between the benefits and barriers but drawing from the barriers, the next section proposes some key enablers that can help in directing SMEs towards the adoption of e-business.

4. Enablers of e-business adoption

Barriers in e-business adoption can be overcome with effort, support and facilities provided by internal (organisation) and external (customers, suppliers, and government) stakeholders to gain strategic advantage. Governments need to develop and promote policies and strategies to create facilitating conditions that benefit SMEs enabling them to adopt e-business. Policies that regulate equal rule of law for all firms (online or offline), boast frameworks that are clear, competitive and transparent, have governing legal laws that confer equal treatment for transactions on both national and global levels are important.

Training and educating owners of SMEs about the potential benefits of e-business is a significant measure that needs to be addressed by governments apart from designing policies and strategies that cover issues relating to telecommunications, consumer rights, security, cyber crime, and privacy.

Technological infrastructure is one of the most crucial enablers for e-business adoption and sustenance. Telecommunications infrastructure and advancements in technology facilitate innovation, efficiency and accelerate economic growth. It is also important that the technology comes at a relatively low cost otherwise it becomes a barrier to adoption again. Nations need to promote and invest in infrastructure that supports interoperability, innovation, variety and expansion, so that it is employed by SMEs effectively.

Lack of information regarding e-business benefits is one of the most common impediments hindering SMEs' inclination towards e-business. Much needed resources like research materials, websites, and practice guides for access to information regarding benefits of e-business adoption should be provided by governments. Fostering information availability across all platforms and maintaining and developing pertinent information content and rights is necessary to promote e-business awareness.

To draw from the discussion in this section, five enablers of e-business adoption come to the forefront: government support, e-business laws and policies, training and education, technological infrastructure, and adequate information. Having identified some key enablers, the paper now focuses its direction on unification of the various aspects of e-readiness that are useful to assess the readiness for uptake of e-business by SMEs.

5. E-readiness

To help businesses assess their preparedness for adopting ICT, various e-readiness tools have been proposed and, although the focus of most tools is on a country's e-readiness, it is

important to note that the assessments can be done for any enterprise including SMEs. Bridges.org (2005) has defined e-readiness as "the ability for a region to benefit from information and communications technology". E-readiness assessments are important as they enable enterprises, communities, and countries to understand their preparedness for adoption of ICT, which will further help in benchmarking, monitoring progress and prioritising action.

Over 25 different tools to assess countries' e-readiness are currently available that use a diverse range of questionnaires, statistical methods, best practices, and historical analyses (Bridges.org, 2005). Most of these existing tools provide contrasting definitions of e-readiness with different goals and objectives and the vast array of often complex tools makes choosing the right tool very difficult. The majority of the available tools provide definitions and validations that are related to government initiatives with no specific emphasis on the needs of SMEs. Before conducting an e-readiness assessment, it is very important that users weigh the pros and cons of each tool to ensure it meets their needs.

5.1 A review of e-readiness assessment tools

The report by Bridges.org (2005) has categorised the e-readiness assessment tools into three different groups: ready-to use tools/questionnaires, case studies, and third party surveys and reports. For the purpose of this paper and to spread the analysis a total of six tools were chosen for a qualitative review that is, two tools from each group. The tools were randomly picked with no particular emphasis on one over the other. The tools that were analysed have been described below:

Asia-Pacific Economic Cooperation (APEC) E-commerce readiness assessment

APEC's tool provides a process whereby every economy can assess its own state of readiness for e-commerce and engage with the business community to set strategies to improve positioning for the digital economy (Asia-Pacific Economic Cooperation [APEC], 2000). This general framework can be applied by any economy or community. The tool builds on six indicators of e-readiness: basic infrastructure and technology, access to necessary communications services, current level and type of use of the Internet, promotion and facilitation activities, skills and human resources, and positioning for the digital economy. These six broad indicators of readiness for e-commerce have been developed into 100 multiple-choice questions. The results of the assessment are not intended to be scored, rather to provide a starting point in a strategic planning process for adoption of e-business (APEC, 2000). The APEC tool is more inclined to focus on assessing government policies for e-business.

Computers System Policy Project (CSPP) Readiness Guide: For living in the Networked World

CSPP's self assessment tool is designed to help towns, cities, counties, states, countries, or any community to determine preparedness for participation in the networked world. The five main categories to assess readiness for a networked world are networked infrastructure, networked access, networked applications and services, networked economy, and networked world enablers. The guide has provided a series of 23 questions that have been segregated into four progressive stages that show the e-readiness of the community under each of the five main categories. One of the major advantages of this guide is its scalability, allowing everyone to adapt it to their needs (Computers System Policy Project [CSPP], 1998). It does not provide guidance on how to move between each of the four progressive stages of e-readiness.

Mosaic Group's Global Diffusion of the Internet (GDI) framework
The GDI framework measures the state of Internet diffusion in an economy. Six categories to assess e-readiness in this framework are: pervasiveness, geographic dispersion, sector absorption, connectivity infrastructure, organisational structure, and sophistication of use. Each category is ranked on a scale of zero (non-existent) to four (pervasive and highly developed) (Mosaic Group, 1998). The lack of an overall score makes it difficult to make adequate comparisons. There is also a mix of quantitative and qualitative data, although primarily qualitative, which makes scores open to individualistic interpretation. It does not factor in literacy levels and access issues (Minges, 2002). GDI only focuses on Internet penetration and not on ICT adoption in general.

Association of Southeast Asian Nations (ASEAN) e-readiness assessment
ASEAN's assessment measured the ten member countries' readiness in terms of ICT infrastructure, e-society, e-commerce, and e-government. The aim of the assessment was to provide member countries with suitable policies to promote e-commerce and an e-society. An analysis of the assessment revealed a limitation showing diversity in ICT indicators available among member countries, their surveyed elements, definitions, methodologies, and their ability to conduct the survey (Rachman, 2002).

McConnell International (MI) Ready? Net.Go! tool
McConnell International's MI Ready? Net.Go! tool aims to evaluate e-readiness of countries, governments, and citizens in the networked economy. The tool has five categories: connectivity, e-leadership, information security, human capital, and e-business climate. The tool rates countries on a scale of one to three that indicate whether conditions are conducive to support e-business or not (McConnell International 2000, 2001). The MI Ready? Net.Go! tool focuses solely on economic growth but emphasises infrastructural issues.

Economist Intelligence Unit (EIU) E-readiness rankings 2009 report
The purpose of EIU's ranking is to allow governments to gauge the success of their technology initiatives against those of other countries. Over 100 separate criteria, both qualitative and quantitative, are organised into six primary categories that are weighted according to their assumed importance as influencing factors. The categories with their weightage are: connectivity and technology infrastructure (20%), business environment (15%), social and cultural environment (15%), legal environment (10%), government policy and vision (15%), and consumer and business adoption (25%). A 1-10 scoring scale is used for all indicators (Economist Intelligence Unit [EIU], 2009). This assessment primarily focuses on business adoption of ICT and the large number of qualitative variables makes objective analysis very difficult.

5.2 An analysis of the investigation of the e-readiness tools
Most of the existing tools seem to focus on countries at a macro level not at a micro level e-readiness assessment for SMEs. Too many categories and sub-categories in the existing tools also make assessment cumbersome. Additionally, no tool provides any guidance on how it could be adapted, developed or extended to assess e-readiness when new paradigms and specialised applications emerge in the arena of e-business or if the focus is different from the originally intended audience. In an attempt to strike a balance between the
varying categories that the above 6 tools have provided and to eliminate any existing redundancy, the following 6 categories come to the forefront. These categories are by no means exhaustive and could be expanded or narrowed depending upon the need of the assessor. The categories are:

Technological Infrastructure: Technology that is less complex, cost effective and executes the needs of companies' specific goals is seen to be vital for SMEs e-business adoption. Every business has to develop strategies to understand the impact of technology on e-business as ICT is becoming more widely used and the role of existing ICT infrastructure needs to be determined. In this category, it is important to ascertain the hardware, software and telecommunication infrastructure that exists.

Knowledge Infrastructure: Barricades to knowledge awareness have to be removed to eliminate inefficiencies resulting due to lack of knowledge. Educating and training SMEs about the inferred knowledge of e-business is essential for boosting confidence in conducting business and to eliminate any existing barriers.

Human Support: Human inventiveness has a significant contribution towards overall business efficiency. Amalgamation of company specific business practices, knowledge and technical expertise allows businesses to leverage the potential of human support in fulfilling individual customer needs in a steady and personal way. Existing human skills and expertise needs to be assessed to reap the benefits of e-business.

Government Support: SMEs need government intervention to promote, educate and provide incentives to adopt e-business. Assessment in this category will determine the contribution of governments in providing favourable environment, implementing policies that address issues related to system infrastructure and broadband use and governing laws guarding security and privacy.

Internet Penetration: Assessing adoption of the Internet by customers and suppliers is of prime importance. This will enable SMEs to decide whether they should adopt e-business or not. High Internet usage by customers and suppliers would mean a good indicator for SMEs, whereas low Internet adoption by customers and suppliers becomes a stumbling block to e-business adoption by SMEs.

Conduciveness: Analysis of the barriers suggested that e-business adoption depends on the products and services that the SME offers. If the product or service cannot be sold online, then it is seen as an impediment to e-business adoption. Often the products or service can be sold online but customers may not want to buy it before inspection and thus e-business turns out to be unsuitable. As mentioned earlier, it can be argued that e-business is not only about buying or selling but other important organisational processes that can be facilitated using ICT.

6. MAMS e-readiness Assessment Framework

Many research attempts have compared the tools, their approaches, the categories they measure (Bridges.org, 2005; Bui et al, 2003; Beig et al, 2007). Numerous but isolated studies, tools and methods of e-readiness measurements with no linkage to the barriers and enablers of e-business adoption however are not sufficient to assess and help SMEs in finally adopting and implementing e-business. Such studies have only added more tools if
the tool/s being investigated are found to be lacking in the categories of assessment to be measured. In contrast the research in this paper was directed towards formulating a more generic and holistic framework for e-readiness assessment.

The proposed MAMS e-readiness assessment framework (Figure 1) links the multiple aspects of e-readiness for e-business adoption together with appropriate links. The links are abstract but logical. The most important links in the framework are inbound to and outbound from e-readiness categories that have been used to name the framework as MAMS (Motivation, Application, Measurement and Support) e-readiness assessment framework. The major components of the framework include:

- *Barriers* that make the provision of the e-readiness requirements difficult and are often the *motivation* to assess the availability and suitability of those assessment categories.
- *Enablers* that would make it possible to overcome barriers and *support and facilitate* the provision of the assessment categories.
- *Assessment methods* to assess how a business entity scores in different areas of e-readiness categories at different levels of operation (micro and macro). The existing methods provide for both qualitative and quantitative *measurements*. Some methods that could be used are questionnaires, case studies, interviews, third party reports and analysis of primary and secondary data.

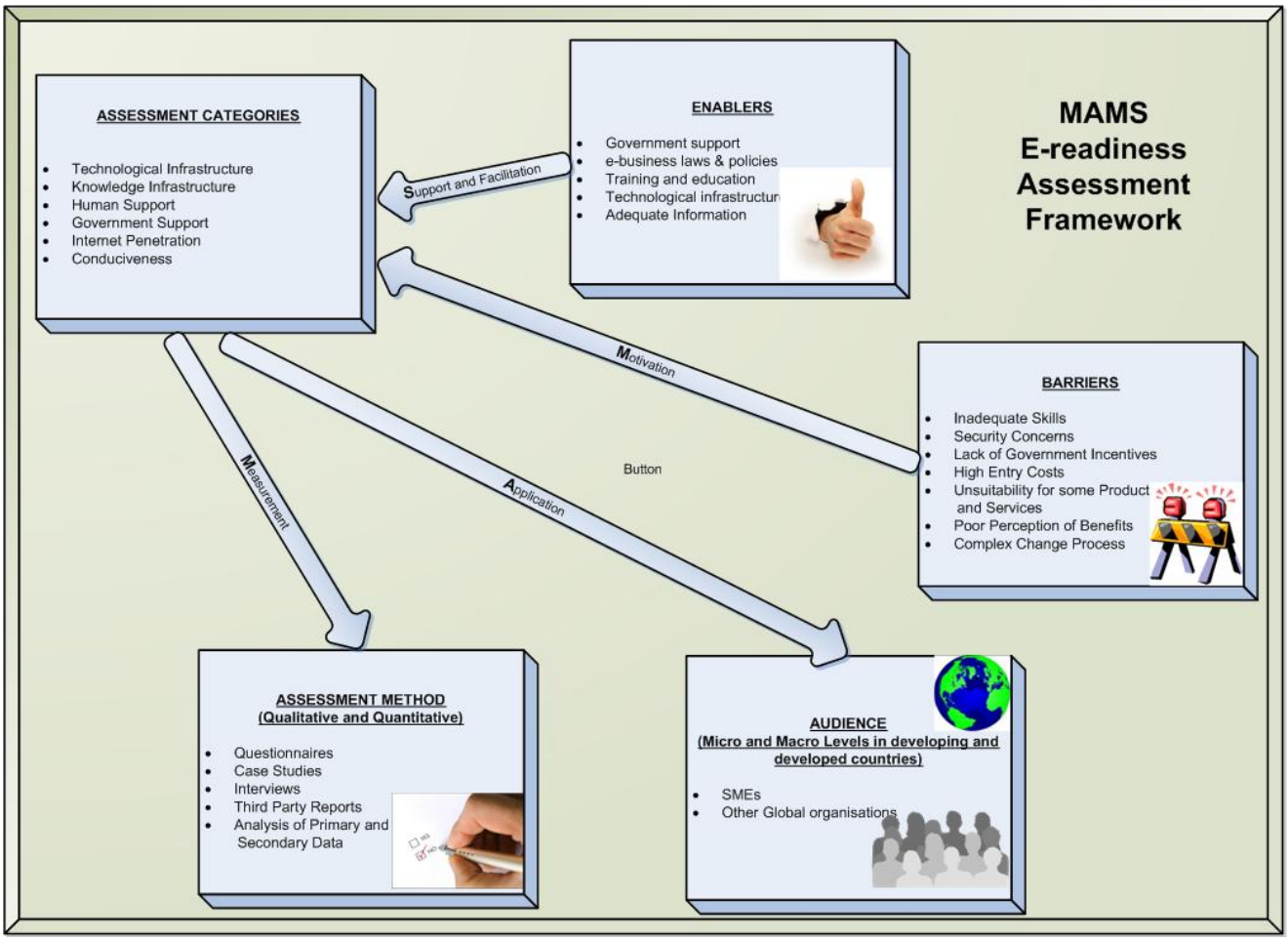

Figure 1: MAMS e-readiness assessment framework

- E-readiness *assessment categories* that are fundamental to e-business adoption as related to particular *application areas and audience* (can be enterprise, communities or countries).

6.1 Application of the framework

The MAMS framework is generic in nature and is independent of the size, nature and the level of the business entity that is being assessed. It provides a comprehensive picture of readiness for e-business adoption by depicting all major components for assessing e-readiness together as a logical collection. Depending upon the scenario and the environment in which a SME operates the blocks can be populated. It is possible to identify content for each of the blocks in isolation but the major use of the framework is in linking the components together to provide an holistic view of the e-readiness assessment of an enterprise. Consequently, the framework can be utilized as a reference to assess, design and implement a supplementary strategic approach for the assessment of e-business readiness of the SME. For example, the framework can be a guide for an iterative assessment of the category by strengthening the enabling support if, in the preceding round, the category was assessed to be weak in e-readiness.

6.2 A generic case of e-readiness for e-business adoption by SMEs

This section explains how the blocks of the framework are populated for the case of e-readiness for e-business adoption by SMEs.

Assessment Categories

As discussed in Section 5.2 SMEs must have access to technological and knowledge infrastructure, human and government support, penetration of ICT to its customers and suppliers, and conduciveness of e-business for the SMEs' products and services. The categories are listed in the corresponding block in Figure 1.

Barriers and enablers

Categories	Barriers	Enablers
Technological Infrastructure	Security Concerns; High Entry Costs	Government Support; Technological Infrastructure; Adequate Information
Knowledge Infrastructure	Inadequate Skills; Security Concerns; Poor Perception of Benefits; Complex Change Process	Government Support; e-business Laws and Policies; Adequate Information
Human Support	Inadequate Skills	Training and Education; Adequate Information
Government Support	Lack of Government Incentives; Poor Perception of Benefits	Government Support; Adequate Information
Internet Penetration	High Entry Costs	Government Support; Technological Infrastructure; Training and Education; Adequate Information
Conduciveness	Unsuitability for some Products and Services	Training and Education; Adequate Information

Figure 1 **Table 1.Categories, barriers, and enablers of e-business adoption**

In the case of e-business adoption by SMEs the impact of barriers may be quite impounding. Within the MAMS framework it is easy to relate barriers to assessment categories and identify if any category is missing. Before populating the blocks of barrier and enablers in

Figure 1, a table is created (Table 1) to show the relationship between the six categories and the corresponding barriers from the barriers discussed in Section 3.2 along with the enablers (from Section 4.0) to alleviate the problem and further understanding. The list of barriers and enablers as extracted from Table 1 are shown in the corresponding blocks in Figure 1. Creating the links between category and the barriers will assist in identifying if any category or enabler is missing.

Assessment methods
Some common assessment methods that could be employed to assess the categories have been shown in the framework. A common application of the framework is to motivate appropriate identification and comparison of various existing tools and methods for the range of categories that can be tested. It should be accepted that one tool will not be suitable for all tests. Some tools will cover all categories that need to be assessed or if a tool is not compatible for some categories it can be extended or combined with other tools.

Following from the above discussion for the case of SMEs' assessment categories, the available tools can be reviewed and the most suitable tool for assessment of the categories can be short listed for use per se or with modifications and extensions. For example, in the case of SMEs soft skills is a critical and integral part of the categories Knowledge Infrastructure and Human Support to overcome the barriers of inadequate skills, security concerns, poor perception of benefits, and complex change process. However, none of the tools reviewed in Section 5.1 provide for assessing soft skills. The tool closest to the requirement of a generic SME application is APEC e-commerce readiness assessment which would then need to be extended to include tests for soft skills.

The above analysis was possible with the holistic nature of the MAMS framework making it vital to consider and work with different components of the framework linked with each other and not in isolation.

6.3 A real world case of e-readiness for e-business adoption by SMEs
A more practical test case, based on a SME in Turkey; Pandora Bookstore, which further illustrates the application of the framework in a real world environment can be found in the Appendix.

7. Conclusion
In order to thrive in a competing environment, SMEs are also beginning to adopt ICT to improve their operations and achieve many benefits. Six existing tools of e-readiness were reviewed that possess their own lacunae and forte but none of them has been tailored specifically for SMEs. In this light, the MAMS e-readiness assessment framework has been proposed that provides an holistic view by putting together the assessment categories, enablers, barriers, assessment methods, and audience. The proposed framework, like other existing tools too, helps to present a simplified representation of reality but allows the user to adapt it to their needs to get an accurate representation of e-readiness. The proposed framework is not expected to be prescriptive but a generic guide that can be used by SMEs to assist in the assessment of their e-readiness. The possibility exists for further refinement of the framework after quantitative studies have been carried out. Alternative research approaches could be used to assess the framework to improve our understanding of its usefulness and applicability.

Indubitably SMEs play an important part in any country's economy and for any country and its organisations to move forward the adoption of e-business cannot be underplayed. It can be expected that in the future SMEs will increasingly migrate from bricks to clicks as they become more aware of the benefits of adopting e-business to facilitate their processes, particularly if their customers and suppliers are also becoming technologically savvy.

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Appendix

Case Study: Pandora Bookstore Turkey

Before proceeding any further, we would like to acknowledge the work of Polatoglu (2007) for the case study of a retailer in an emerging market. The details found in his paper about the Pandora bookstore were gleaned and applied to the MAMS framework.

Pandora bookstore is an example of a small retail business that now claims to be Turkey's largest online bookstore. The physical Pandora bookstore (brick and mortar) was established in 1991 in Istanbul, Turkey. Pandora's target market consists of students, academics, professionals and other fictional and non-fictional book readers. It offers an extensive selection of books, both in Turkish and other foreign languages.

The bookstore was one of the first small retail bookstores that introduced in-store online information kiosks for customers. Pandora established one of the first private websites in Turkey in 1994. It launched an e-commerce website that facilitated book sales in 1997 offering national and international books. The website provides detailed information about books in its inventory allowing customers to make an informed decision.

In the initial years of operation, most of the online orders were from overseas but as use of the Internet became widespread in Turkey domestic orders also increased rapidly. The current website is predominantly in Turkish apart from some book descriptions in English. As palpable the business has been able to reach out to Turkish readers both in Turkey and overseas.

Although as evident in this case that e-business activities have already been embraced by this business the MAMS framework can still be applied, which also demonstrates and validates the versatility of the framework. The generic nature of the MAMS framework makes it possible to apply it to any business entity independent of the size, nature and the level of the business being assessed. Based upon this premise and the environment in which Pandora operates, the blocks of the framework have been populated in Figure 2 on the next page. A description of the elements in the blocks can be provided but the detailed nature of such an analysis is outside the scope of this paper.

Based on the above assessment, it can be argued that Pandora was ready for embracing e-commerce in the mid 1990s. Although it is too late for us to proclaim it now as the business is already operating successfully, it is important to understand that the aim of the paper was to illustrate the applicability of the framework. The descriptive case study of Pandora bookstore by Polatoglu (2007) has been captured in the integrated pictorial framework to provide a snapshot of e-readiness in this SME. The populated framework has provided a very simplified view of the e-readiness of Pandora however other users can adapt it to their needs to get an accurate representation of e-readiness for their SMEs.

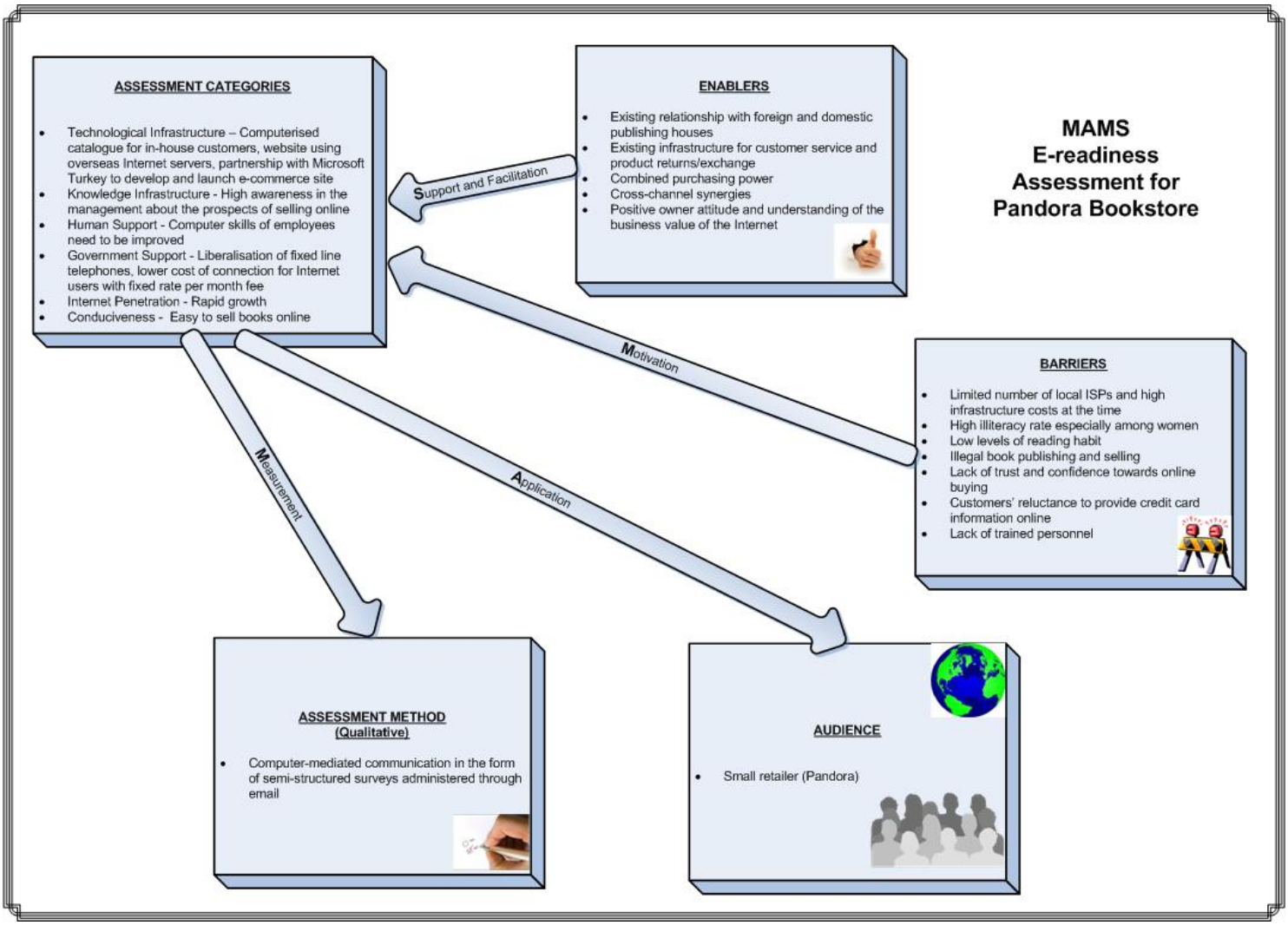

Figure 2: MAMS e-readiness assessment for Pandora Bookstore